

## ASSESSING THE GLOBAL USE POTENTIAL OF SULFURYL FLUORIDE

D.M. Chambers & C.E. Millard, DowElanco, Indianapolis, IN, USA

Sulfuryl fluoride ( $\text{SO}_2\text{F}_2$ ) was developed by The Dow Chemical Company/DowElanco in the late 1950s as a structural fumigant. It is an inorganic molecule which is a gas at temperatures above  $-67^\circ\text{F}$ . It is nonflammable, non-corrosive (below temperatures of  $752^\circ\text{F}$ ), and does not cause undesirable odors. In its gaseous state, it does not possess a detectable odor or color. It quickly penetrates structural materials, is effective against a variety of structural pests, and dissipates rapidly during aeration. Once aerated from the structure it rapidly dissipates into the atmosphere and is broken down mainly through hydrolysis to release fluoride and sulfide ions. The presence of sulfuryl fluoride in the atmosphere is calculated to have virtually no impact on global atmosphere. Because sulfuryl fluoride contains no chlorine or bromine it can not react to deplete the stratospheric ozone by known mechanisms.

Sulfuryl fluoride is currently registered for use under the trade name Vikane\* gas fumigant (contains 99% sulfuryl fluoride and 1% inerts). It can be used to control a wide range of pests including drywood and Formosan subterranean termites, wood-destroying beetles, furniture and carpet beetles, clothes moths, cockroaches, and rodents infesting buildings, furnishings, construction materials and vehicles (not including submarines and aircraft).

Vikane gas fumigant has been marketed since 1961 in the United States and the Caribbean with its primary use being to control infestations of drywood termites. In 1994, Vikane gas fumigant was registered for use in Germany, with an estimated 50 historic buildings (mainly churches) being treated per year in this country. In 1995, registration for Vikane gas fumigant was received in Sweden. Efforts are underway to obtain registrations in other European countries for the control of wood destroying organisms in structures.. In response to numerous inquiries from a variety of industry groups, DowElanco is currently involved in efforts to increase the current uses of Vikane gas fumigant in two selected markets: (1) quarantine fumigation applications, and (2) use in empty food processing facilities.

Under current quarantine procedures (USDA-APHIS PPQ Treatment Manual and the AQIS Cargo Container Quarantine Aspects and Procedures Manual), treatment rates for sulfuryl fluoride are provided for fumigation of non-food cargo potentially infested with wood-infesting beetles. Efforts are currently underway to develop treatment schedules for additional target insect pests of non-food goods. An additional quarantine fumigation opportunity for sulfuryl fluoride is the development of treatment schedules to fumigate timber being imported into the United State, Europe and Japan to control wood-destroying beetles and/or fungal pathogens.

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The second area where Vikane gas fumigant use can be increased is for the treatment of empty food processing facilities. Historically, DowElanco has been involved in the successful fumigation of a potato processing facility during shutdown to control an infestation of German cockroaches. Efforts are currently underway globally to develop efficacy data on other key insect pests of empty food mills.

Regardless of the market, DowElanco is firmly committed to the proper stewardship of Vikane gas fumigant. All distributors who sell, and fumigators who apply this product, must comply with the DowElanco stewardship policy. The objective of this policy is to promote the proper storage, sale, transportation and use of Vikane gas fumigant. Key components of this stewardship policy center around the proper use of a warning agent, SCBA, and an approved detection device to clear a fumigated area prior to re-occupancy.